

We claim:

1 1. A surgical probe, comprising:
2 a shaft defining a distal end and a proximal end;
3 a plurality of energy transmission devices supported on the
4 shaft; and
5 a tissue cooling apparatus supported on the shaft including an
6 outer member positioned about the plurality of energy transmission devices
7 such that a continuous fluid transmission space is defined therebetween
8 having an inlet and an outlet.

1 2. A surgical probe as claimed in claim 1, wherein the shaft
2 comprises a relatively short shaft.

1 3. A surgical device as claimed in claim 2, wherein at least a
2 portion of the relatively short shaft is malleable.

1 4. A surgical device as claimed in claim 1, wherein the plurality of
2 energy transmission devices comprises a plurality of electrodes.

1 5. A surgical probe as claimed in claim 1, wherein the tissue
2 cooling apparatus comprises a porous structure.

1 6. A surgical probe as claimed in claim 5, wherein the porous
2 structure comprises a microporous structure.

1 7. A surgical probe as claimed in claim 1, wherein the fluid
2 transmission space defines a substantially constant cross-sectional area
3 between the inlet and the outlet.

1 8. A surgical probe as claimed in claim 8, wherein the fluid
2 transmission space defines a substantially annular shape.

9. A surgical probe as claimed in claim 1, further comprising:
a fluid supply line associated with the inlet and supported on the
exterior of the shaft.

10. A tissue cooling apparatus for use with an electrophysiology
apparatus including a shaft and at least one energy transmission device
supported on the shaft, the tissue cooling apparatus comprising:

a base member defining an interior lumen that is slightly larger
than the electrophysiology apparatus shaft and a proximal opening adapted to
receive the electrophysiology apparatus shaft, the base member including a
fluid lumen port in fluid communication with the interior lumen;

a tubular member, associated with the base member, defining a
proximal end, a distal end, an interior lumen substantially aligned with the
base member interior lumen and at least one aperture located between the
proximal and distal ends; and

an outer member supported on the tubular member such that a
fluid transmission space is defined between the outer member and the tubular
member.

11. A tissue cooling apparatus as claimed in claim 10, wherein the
outer member defines a distal end, the tissue cooling apparatus further
comprising:

a fluid lumen port associated with at least one of the distal end
of the tubular member and the distal end of the outer member.

12. A tissue cooling apparatus as claimed in claim 10, wherein the
base member interior lumen includes a seal adapted to engage the
electrophysiology apparatus shaft.

13. A tissue cooling apparatus as claimed in claim 10, wherein the
tubular member comprises a flexible tubular member.

14. A tissue cooling apparatus as claimed in claim 10, wherein the at least one aperture comprises a plurality of apertures.

15. A tissue cooling apparatus as claimed in claim 10, wherein the outer member comprises a porous structure.

16. A tissue cooling apparatus as claimed in claim 15, wherein the porous structure comprises a microporous structure.

17. A tissue cooling apparatus as claimed in claim 10, wherein the outer member defines proximal and distal ends and the proximal and distal ends of the outer member are secured to the tubular member.

18. A tissue cooling apparatus for use with an electrophysiology apparatus including a shaft and at least one energy transmission device supported on a distal portion of the shaft, the tissue cooling apparatus comprising:

a base member adapted to be removably mounted on the electrophysiology apparatus shaft including an inlet port and a seal configured to mate with the electrophysiology apparatus shaft; and

a fluid transfer assembly, operably connected to the base member, including an outer member in fluid communication with the inlet port defining a size and shape sufficient to receive the distal portion of the electrophysiology apparatus shaft in such a manner that a fluid transmission space is defined between the electrophysiology apparatus shaft and the outer member and an outlet port.

19. A tissue cooling apparatus as claimed in claim 18, wherein the outer member comprises a porous structure.

20. A tissue cooling apparatus as claimed in claim 19, wherein the porous structure comprises a microporous structure.

1 21. A tissue cooling apparatus as claimed in claim 18, wherein the
2 fluid transfer assembly includes a tubular member including a plurality of
3 apertures , the plurality of apertures being located within the outer member.

1 22. A tissue cooling apparatus as claimed in claim 18, wherein the
2 tubular member is secured to the base member and the outer member is
3 supported on the tubular member.

1 23. A tissue cooling apparatus for use with an electrophysiology
2 apparatus including a shaft and at least one energy transmission device
3 supported on a distal portion of the shaft, the tissue cooling apparatus
4 comprising:

5 a fluid transfer assembly defining an inlet, an outlet, and a size
6 and shape sufficient to receive the distal portion of the electrophysiology
7 apparatus shaft in such a manner that a fluid transmission space is defined
8 between the electrophysiology apparatus shaft and the outer member; and

9 mounting means for removably mounting the fluid transfer
10 assembly onto the electrophysiology apparatus shaft.

1 24. A tissue cooling apparatus as claimed in claim 23, further
2 comprising:

3 sealing means for forming a seal between the mounting means
4 and the electrophysiology apparatus shaft.

1 25. A tissue cooling apparatus as claimed in claim 18, wherein the
2 fluid transfer assembly comprises a porous structure.

1 26. A tissue cooling apparatus as claimed in claim 19, wherein the
2 porous structure comprises a microporous structure.

1 27. A tissue cooling apparatus as claimed in claim 23, further
2 comprising:

- 3 sealing means for forming a seal between the mounting means
4 and the electrophysiology apparatus shaft.

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